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CEREBRAL ALTITUDE AND THE LAW OF PROGRESS.

(CONTINUED FROM PAGE XIV.)

In the formation, growth, and maturation of the human brain, ascending development is the law of life: the lower structures are formed first, and the higher structures afterwards. The lower structures ripen first, and acquire their capacity for vigorous action, while the higher structures ripen later, and acquire their capacity for vigorous action only with the maturity of the individual. Thus, in the intellectual region of the brain, development commences at the basis of the front lobe, and at the anterior basilar part of the middle lobe. SENSIBILITY, or the common sense of feeling, which is located at the anterior basis of the middle lobe, is the first conscious endowment belonging to life. Sensation of some character, is the first distinction between animal and vegetable life. Before the unborn infant can have any ideas, it has a sensitive consciousness of existence, and a consciousness of agreeable or disagreeable sensations, which render it restless, or soothe it to repose.

The last remnant of intellectual action in the sleeper is a vague consciousness of physical comfort or discomfort as he lies upon his bed; and the first conception to which he awakens, is a consciousness of existence through some pleasant or unpleasant sensation.

In immediate connection with this general sensibility arises another form of sensitive action, the sense of a want of air, and the sense of a need of food. Common sensibility, hunger, thirst, and the respiratory sense, are thus in vigorous and active operation, from the commencement of independent life, before the infant is capable of forming any conception of external objects. It is probably several weeks before the progress of development has ascended from the basis of the middle lobe to the basis of the front lobe, and sufficient maturity of structure has been

produced to capacitate the infant for forming accurate ideas of external objects. It is true, the eyes form the images of all external objects as soon as they are opened; but the mere existence of a picture in the eye does not constitute vision. It is not until after a process of exercise or education, that the individual learns that the colored pictures upon the retina of his eye, correspond to objects exterior to his person, and becomes enabled to judge of their distance or position. The first act of vision is the simple perception of light, unconnected with the corresponding conception of objects. The visual power which thus recognises light, without perceiving the geometrical qualities of form, size, and distance, lies at the basis of the front lobe, vertically above the pupil of the eye, and below the organ of Color. These fibres in conjunction with certain additional fibres, nearer the nose, form conceptions of light and darkness, from which simple conceptions all our ideas of form, position, and magnitude are evolved by the action of the organs Form, Size, and Distance (or Locality), which, with the assistance of Color, complete the picture of external nature. These four organs are higher in character than the power that simply recognises light and darkness, and are accordingly located a little higher, but in immediate connection with the inferior organs upon which they depend.

In the blind man the organs of Form, Size, and Distance having been exercised and acquired a considerable development, he is prepared to use them efficiently, and when his blindness is removed, as by couching a cataract, these organs require merely to enter into a new connection with the inferior fibres which give the sense of light and darkness, and as soon as the latter organs are roused to vigorous action, the association becomes established, and he speedily learns to exercise the sense of vision with correctness and facility. But in the infant who has not yet matured the perceptive organs of Form, Size, Distance, and Color, those organs have to undergo a gradual exercise and development, based upon the excitement which they receive from below.

It is perfectly obvious that the higher organs of the intellect cannot act until they have derived materials of action from the lower strata. Until objects have been seen, no ideas of objects exist; until they have been repeatedly observed, there is no knowledge; hence the continual influx of impressions through the external senses, gradually develops the lower range of perceptive organs, while their activity and development imparts a corresponding development to the recollective and reflective powers, which are located still higher. Thus the stream of mental excitement is continually flowing upward, from the basilar to the superior organs of the front lobe; and in proportion as the influx of impressions is more rapid, the development of the lower range proceeds with greater vigor, and the progressive excitement which extends to the upper range advances their structure more

rapidly to maturity. A child confined within doors, without education, observation, or employment, remains long in a state of imbecility and ignorance; but if allowed to run at large, his perceptive organs rapidly grow by the observation of nature and society—his memory is strengthened, and his judgment matured. If, in addition, to this diversified experience, knowledge is presented to his perceptive powers, by an active course of education, his intellectual organs still more rapidly mature.

It appears, then, that the the highest development of the higher powers of the intellect, is entirely based upon the previous development of the perceptive, knowing organs. Hence, in the earlier ages of the world, when knowledge was limited, the perceptive faculties were actively employed, but were by no means competent to accumulate that stock of knowledge which is necessary to sustain and develop the higher powers in a proper manner. The earlier ages of the world, like the infancy of the individual, were devoted to perception and memory—to the acquisition of knowledge, rather than to the accumulation of wisdom. But as the world advances, slowly accumulating knowledge, each succeeding century finds mankind in a new position. Our stock of knowledge, enriched by the accumulations of our immediate ancestors, enables us to take a higher step in intellectual development. No longer required to spend our time in the mere accumulation and retention of facts, our intellects become expanded at once, by a vast influx of knowledge, long and laboriously gathered, and we proceed to the exercise of those higher organs which give soundness of judgment, and profundity of philosophy. How many philosophical absurdities and errors, which a century ago passed unquestioned, are now overthrown beyond restoration, and incapable of any longer perverting the reason of man!

Accumulated knowledge fills the mind with philosophical truth, and strengthens its capacity for the discovery of additional truths. True knowledge, which is congenial to intellectual development—which is, in fact, the very food upon which the intellectual faculties subsist—is antagonistic to falsehood and ignorance, which benumb the intellectual organs, and retard their development. When ignorance has been removed by the labor of ages, the intellectual power which that ignorance paralyzed, springs into new life and movement, and enlarges the permanent capacities of the race—capacities for reasoning and judging correctly, for seizing the truth, and rejecting error, for deciding wisely, and for growing in intellectual strength.

The large number of falsehoods which still press upon the intellects of the mass of mankind, and deprive them of the power of reasoning, correctly show that the world is still far from its age of maturity—very far indeed from that harmonious development of its intellectual powers, which shall render its judgement

and its reason as accurate as its powers of perception. Centuries upon centuries must we continue in the sphere of scientific knowledge, recording with precision the analysis of minerals, the estimation of mechanical forces, the accumulation and description of stones, shells, and plants, the surveys of planets and stars, the measurement of their orbits, the exploration of the globe, the description of its myriads of animals, with the chemical and anatomical analysis of living bodies, and a host of other labors, of the perceptive faculties, before the accumulated knowledge shall become sufficient to compel the evolution of higher truths, and to qualify the intellect of the world for appreciating the relations of society and individuals to each other, and the harmonious relation of the anthropological and spiritual worlds. The great majority of the world's intellect at present, limited to positive science, and checked in philosophical advancement by the falsehoods that arise from ignorance, is utterly incapable of comprehending the philosophy of society, and of appreciating the existence or the philosophy of the spiritual world. But the certainty that the time must come, when man shall comprehend the philosophy of society, and shall organize his life in harmony and happiness, rests upon the undeniable truth that every addition to our positive knowledge removes a source of error, and that the slow progress of accumulating knowledge must finally overwhelm all sources of falsehood and error, leaving truth alone to guide our career. It is based, also, upon the demonstrable fact, that the destiny of the individual is a type of the destiny of the race—that as the individual matures his powers from perception to knowledge, judgment, and wisdom, so the race advances from simple perception and knowledge to practical and philosophical wisdom, and with each successive increase of knowledge it becomes entirely incapable of reverting to those falsehoods which that knowledge superceded.

The era of the final development and predominance of the reasoning powers, is indeed far distant. Positive science, however dry and meagre it may be, holds at the present time the sceptre of the intellectual world. And accumulations of learning, which are but exercises of memory, rank vastly higher than the simpler and more unpretending truths evolved by the philosophical intellect. The man of science fills volumes and libraries with his elaborate, minute, and tedious descriptions of the facts of nature. The dry and repulsive, though necessary details of chemistry, mineralogy, conchology, entomology, botany, comparative anatomy, ichthyology, ornithology, meteorology, technology, palæontology, geography, and hydrology, etc., fill of an immense space in libraries, and present an appalling amount of detail, which no single intellect can grasp. This is the broad and immense foundation of human knowledge. The man of literature and learning, less voluminous in his details, still

presents an imposing array of knowledge; but the man of philosophical comprehension, after surveying the area of human knowledge, will place upon a single page the laws of nature, and the philosophical truths, to the illustration of which men of science and of learning have devoted volumes.

In the present condition of the world, science and learning alone command profound attention; and pure philosophy, unless it should be disguised and smuggled in with a mass of science and literature, commands little regard. Majendie may publish a book of researches and experiments upon the blood, which will command the world's notice; but had any other author, or even Majendie himself, condensed upon a single page the general laws or truths which he established, and published them to the world, they would have attracted but little more attention or interest than a whisper might receive amid a turbulent multitude. The highest truths, which are the least bulky and voluminous, occupy too little space to catch the eyes of the world, and centuries must yet elapse before the world's intellect shall be competent to recognise truth upon its first presentation. In intellectual matters, our race is as yet but juvenile; nor has it entered fairly upon the age of adolescence. Manhood is still remote, but coming on as surely as the lapse of centuries.

PROGRESS OF SPIRITUALISM.

The well-established facts of Spiritualism are becoming continually more widely known, and better authenticated, while the rare and more astonishing phenomena are beginning to become familiar, and cease to excite the doubt and opposition with which they were at first received among liberal inquirers.

The first number of Putnam's American Monthly Magazine contains an article from the pen of Horace Greeley, from which the following is an extract:

A few days ago, a Mr. Humes, residing in one of the interior towns of Connecticut, happened to be in Bridgeport, and there called on his friend Dr. Jaques, to whom he casually broached the subject of "spiritual manifestations," and avowing his total incredulity with regard to them. Dr. J. replied, that, if evidence would convince him, he thought his skepticism might be overcome; and they soon agreed to visit in company a Miss Middlebrook (some twelve or thirteen years old), who is a reputed "medium." On their way, Mr. H. concocted four or five questions which he

resolved to ask the invisibles in presence of Miss Middlebrook, saying to Dr. J. that if these questions were answered correctly he would be no longer incredulous. He asked his questions accordingly, and they were all answered to his satisfaction; but now he thought of a few more that he would like to put, which he did with equal success. At length he asked, "Who are you that answer me?" Ans.—"I am your uncle William." "No, you are not," said Mr. H., "*for I never had any uncle William.*" "Yes, you did," persisted the invisible, "but you never saw and probably never heard of me. I left Connecticut when very young for the interior of New York, and died there a great many years ago." Mr. Humes persisted that he never had any such uncle, and the interview rather abruptly closed.

Several days thereafter, Dr. Jaques, in the course of an inland ride, came across the father of Mr. Humes, a venerable patriarch of eighty, whom he abruptly accosted thus: "Mr. Humes, had you ever a brother William?" "No, sir," was the ready reply. The doctor turned away rather crest-fallen, and was riding off, when the old man recalled him with—"Stop, Doctor! I was mistaken. I *had* a brother William; but he went off West, and died several years before I was born, and I haven't thought of him for many years till now. I don't think there is another person alive who knows that I ever had such a brother. What could have put him into your head?" We have this narrative at second-hand, but on testimony whose accuracy and truth we cannot doubt.

Of like bearing with the above is the testimony of Apollos Munn (now deceased), that, on the occasion of his first visit to a "medium," in a city of over three hundred miles from his residence, and where he was quite sure no one knew him, he asked a number of questions which were answered with what seemed to be superhuman perspicacity, until he finally asked, "Who are you that answer me?" "I am your sister Lois." "I never had such a sister—my sister's name was Louisa." "No, my name was Lois." He left the matter thus at a dead lock, and on returning to his home, said—"Mother! can I be mistaken as to the *name* of my deceased sister? Though I never saw her, I supposed I could not be mistaken as to her *name*." "It was *Lois*," quietly responded the mother.

I do not see how such relations as these, assuming that they are not utter fabrications, are to be accounted for on the theory of juggle, or even on that of contagious self-delusion. If we attribute the whole business to Satan, we get rid of this difficulty, but only to rush inevitably on others, perhaps no whit less formidable. Among these is the intrinsic improbability that the old reprobate should give utterance to such counsel as is very often proffered through "mediums," and which, assuming that Satan is their author, would seem entirely to contradict Lord Byron's observation with reference to his own "Cain," that "if you permit

the devil to speak for himself, you musn't expect him to talk like a parson." For instance, in the backwoods of Western Pennsylvania dwells a rude but good-hearted pioneer of our acquaintance, named Martin King, whose little daughter of twelve or thirteen years became a "medium" about a year ago. Martin is in the main a good creature, but his education is very defective, which is the only excuse we can make for his bad habit of keeping a barrel of whisky on tap, to deal out at a shilling per quart to his hail-fellow neighbors. The "spirits" who manifested themselves through the medium of the daughter, promptly demanded that the "spirits" (and water) confined in the whisky-barrel should be cast out, and no more be harbored on the premises. It would take direct and abundant evidence to convince us that it was Belzebub in this instance who directed the casting out of the alcoholic demon.

But having no settled belief of our own with regard to the origin and nature of this modern 'spiritualism,' we are very far from wishing to impose one on others. We might cite many well-authenticated facts and incidents which tend quite as strongly as those we have just cited, to prove these 'manifestations' the work of some superhuman power; we could cite many others which point to an opposite conclusion. Should the subject prove of general interest, we may quote and contrast some of these apparently contradictory phenomena hereafter. Meantime, the lesson we would insist on is this—Let us not fear to open our eyes lest we see something contrary to our preconceptions of Nature and Providence; for if these preconceptions are at war with *facts*, it is high time they were revised and corrected. Bacon very justly observed that 'a little learning inclines us to Atheism, but *more* learning carries us back to a belief and trust in God;' and we have no doubt that, whenever we shall clearly and fully understand whatever of truth is involved in these 'knockings,' etc., we shall realize its perfect accord with nature, with reason, and with the beneficence, omniscience, and paternal guardianship of the God and Father of us all.

P. S.—Since the foregoing was in type, the writer has received the following letter from Mrs. Sarah H. Whitman, of Providence, R. I., in reply to one of inquiry from him, as to her own experience in 'Spiritualism,' and especially with regard to a remarkable 'experience' currently reported as having occurred to Hon. James F. Simmons, late U. S. Senator from Rhode Island, and widely known as one of the keenest and clearest observers, most unlikely to be the dupe of mystery or the slave of hallucination. Mrs. Whitman's social and intellectual eminence are not so widely known, but there are very many who know that her statement needs no confirmation whatever. Her reply was so long delayed, owing to illness, that only a part of it can here be given; but the most material portion is as follows:

"DEAR SIR: I have had no conversation with Mr. Simmons on the subject of your note, until to-day. I took an early opportunity of acquainting him with its contents, and this morning he called upon me to say that he was perfectly willing to impart to you the particulars of his experience in relation to the mysterious writing *performed under his very eyes in broad daylight, by an invisible agent*. In the fall of 1850, several messages were telegraphed to Mrs. Simmons through the electric sounds, purporting to come from her step-son, James D. Simmons, who died some weeks before in California!

"The messages were calculated to stimulate curiosity, and lead to an attentive observation of the phenomena. Mrs. S., having heard that messages in the handwriting of deceased persons were sometimes written through the same medium, asked if her son would give her this evidence. She was informed (through the sounds) that the attempt should be made, and was directed to place a slip of paper in a certain drawer at the house of the medium, and to lay beside it her own pencil, which had been given her by the deceased. Weeks passed on, and although frequent inquiries were made, no writing was found on the paper.

"Mrs. Simmons, happening to call at the house one day, accompanied by her husband, made the usual inquiry, and received the usual answer. The drawer had been opened not two hours before, and nothing was seen in it but the pencil lying on the blank paper. At the suggestion of Mrs. S., however, another investigation was made, and on the paper was now found a few penciled lines, resembling the handwriting of the deceased, but not so closely as to satisfy the mother's doubts. Mrs. Simmons handed the paper to her husband. He thought there was a slight resemblance, but should probably not have remarked it had the writing been casually presented to him. Had the *signature* been given him he should at once have decided on the resemblance. He proposed, if the spirit of his son were indeed present, as alphabetical communications, received through the sounds, affirmed him to be, that he should *then and there* affix his signature to the suspicious document.

"In order to facilitate the operation, Mrs. S. placed the closed points of a pair of scissors in the hands of the medium, and dropped his pencil through one of the rings or bows, the paper being placed beneath. Her hand presently began to tremble, and it was with difficulty she could retain her hold of the scissors. Mr. Simmons then took them into his own hand, and again dropped his pencil through the ring. It could not readily be sustained in this position. After a few moments, however, it stood as if poised and perfectly still. *It then began slowly to move. Mr. S. saw the letters traced beneath his eyes—the words J. D. Simmons were distinctly and deliberately written, and the handwriting was a fac simile of his son's signature.* But what Mr. S. regards as the most astonishing part of this seeming miracle, is yet to be told.

“Bending down to scrutinize the writing more closely, he observed, just as the last word was finished, that the top of the pencil leaned to the right; he thought it was about to slip through the ring, but, to his infinite astonishment, *he saw the point slide slowly back along the word ‘Simmons’ till it rested over the letter i, where it deliberately imprinted a dot.* This was a punctilio utterly unthought of by him; he had not noticed the omission, and was therefore entirely unprepared for the amendment. He suggested the experiment, and hitherto it had kept pace only with his will or desire; but how will those who deny the agency of disembodied spirits in these marvels, ascribing all to the unassisted powers of the human will, or to the blind action of electricity—how will they dispose of this last significant and curious fact? The only peculiarity observable in the writing was, that the lines seemed sometimes slightly broken, as if the pencil had been lifted and then set down again.

“Another circumstance I am permitted to relate, which is not readily to be accounted for on any other theory than that of spiritual agency. Mr. S., who had received no particulars of his son’s death until several months after his decease, purposing to send for his remains, questioned the spirit as to the manner in which the body had been disposed of, and received a very minute and circumstantial account of the means which had been resorted to for its preservation, it being at the time unburied.

“Impossible as some of these statements seemed, they were, after an interval of four months, confirmed as literally true by a gentleman, then recently returned from California, who was with young Simmons at the period of his death. Intending soon to return to San Francisco, he called on Mr. Simmons to learn his wishes in relation to the final disposition of his son’s remains.

“I took down the particulars in writing, by the permission of Mr. S., during his relation of the facts. I have many other narratives of a like character from persons of intelligence and veracity; but they add nothing to the weight of that which I have just reported to you.”

What is the next step? Invisible spirits write not only with the hands of mediums but with pencils which no one holds.—This has been done wherever spiritualism has become prevalent. Tables are moved and lifted—persons seated upon them are carried about. Advice is given by the spirits in reference to business, health and the conduct of life. They come into contact with the person, rapping or applying a hand upon some part of the body, and to those enjoying spiritual or clairvoyant endowments, they render themselves visible. In the most impressive manner, by actual touch, by conversation, by raps and movements, and by visible presentation of themselves, they have made their living reality and their affectionate nearness known to thou-

sands of surviving friends. And although spirits appear to be incapable of agitation, unhappiness or grief on account of events occurring among the living, they are kindly disposed to assist the suffering, and to impart medical relief by neuvauric operations upon the impressible and by medical advice. Many remarkable instances of relief thus imparted by spiritual energy are narrated in private circles, and published in the spiritual papers.

The next step in spiritual wonders is to appeal to the ordinary sense of hearing, by audible speech, producing a real material impulse in the atmosphere, and not addressed to the spiritual senses of clairvoyants and seers, but audible to all. Examples of audible speech I have heard of at different times, especially soon after the first burst of interest upon the subject in the United States. Recently an intelligent young friend in Cincinnati assures me that he has heard repeatedly faint voices or whispers from the spirits; and it appears by the following letter of Dr. A. Underhill to the *New Era*, that the demonstrations are becoming bolder:

"Cleveland, Ohio, Dec. 1852.

"Spiritualism is flourishing in every part of Ohio and the West, with a power which must soon overcome all opposition. I hear of astounding facts and manifestations, such as are carrying dismay into the ranks of bigotry and superstition, from many quarters. I visited Grafton, twenty miles West of Cleveland, and there learned the spirits had spoken orally (not through a medium), so that all in the room not only heard it, but they held a conversation with the unseen presence. The medium, however, could *see* the spirit. Such is the progress of Spiritualism.

"A. UNDERHILL."

EUROPEAN RACES IN THE UNITED STATES.*

BY EDWIN WILLIAMS.

The predominance of the Anglo-Saxon race in numerical as well as in intellectual capacity in that part of North America comprised within the area of the Republic of the United States has

*This article was originally published in the *London Times*, as a letter from an American correspondent.

been generally admitted, or, indeed, scarcely denied, until within a very recent period. It now seems to have become important to political demagogues, in their anxiety to wield an influence with the numerous classes of the American population, principally from Ireland, and Germany, who have swelled the ranks of emigrants to these shores within the last quarter of a century, to misrepresent and exaggerate the proportion of the Celtic and modern German element in the aggregate numbers of the American nation. An Irish-American writer of this stamp, I observe, is quoted as an authority in the last January number of the *London Quarterly Review*, and on that account deserves attention, for the purpose of correcting his gross misrepresentations.

In the article referred to (on "Highland Destitution and Irish Emigration,") the *Quarterly* says:—

"But what will be the influence of the Irish exodus upon the destinies of the great American Republic? The population of the United States is probably the most mixed and heterogeneous on the face of the earth. The Slavonic element, which is entirely antipathic, is almost the only European one not represented there. The native German, the Anglo-Saxon, the Milesian, and the Gælic sub-varieties of the Celtic race—to say nothing of the African—have all contributed largely to the composition of that strange people. But if any reliance can be placed on the accuracy of the following table, which seems to have been constructed with great care by a Mr. William E. Robinson, and read before a learned and statistical assemblage at Clinton, in New York, the Celtic blood even now predominates. The gross population of the Union was, in 1850, a little above 23,000,000, which (says Mr. Robinson) may be thus appropriated:

Irish born,	-	-	-	-	3,000,000
Irish by blood,	-	-	-	-	4,500,000
German by blood or birth,	-	-	-	-	5,500,000
Anglo-Saxon by blood or birth,	-	-	-	-	3,500,000
French, or other Celtic, by blood or birth,	-	-	-	-	3,000,000
Colored, free or slave,	-	-	-	-	3,500,000
Total,					23,000,000.

"According to this table (the *Quarterly* gravely remarks), more than half the white population of the United States are Celtic; more than a third Irish Celts: more than a seventh actually of Irish birth. This increasing predominance of a race so of strongly marked a character, and of qualities so opposed to those of the Anglo-Saxon, may well give rise to considerable anxiety, on the other side of the Atlantic, and to interesting speculation here. If the Irish, enabled by their numbers to congregate together there as in the old country, and thus to withdraw themselves in

a great measure from the influences of a new scene and a superior race, shall retain their national features unchanged or only slightly modified, they may affect greatly the aggregate character and the political and social proceedings of the Union. The stern and resistless energies of the Anglo-Saxon may, and probably will, still, enable him to retain the supremacy, but even then, the destinies and the nature of the American people, as a whole, must be affected by this inordinate infusion of Irish blood."

As I shall be able to show that the reviewer reasons upon false premises, founded upon the misrepresentations of the Irish lecturer "before a learned and statistical assemblage at Clinton, in New York" (which assemblage, by the way, was principally composed of young men and plain country people at the commencement of Hamilton College, a minor institution in central New York), I think he may dismiss his apprehensions as to the effects which an Irish Celtic emigration in large numbers may produce on the character of this Anglo-Saxon Republic in its social or political relations. If I were, however, to admit the facts stated, such is my confidence in the predominance of the Anglo-Saxon intellect, and governing powers over the other races with which the people of this vigorous stock comes in contact, that I should still believe in the permanency of Anglo-Saxon institutions, government, and social superiority, as much in America as in Great Britain. All experience on both sides of the Atlantic serves to confirm the soundness of this opinion. In the United States it is well known that the only influence the Celtic race, when banded together, has exercised upon our politics, has been in the use which has been made of them by demagogues (generally of other races, and most frequently Anglo-Saxon), to hold the balance of power between the contending parties, and thus to elevate aspiring individuals to office and power. A transfer to the American continent of the entire Celtic population of Ireland need not, therefore, create any feelings of apprehension among those who are anxious for the perpetuity of Anglo-Saxon rule and predominance. Indeed, most of the Irish and other emigrants who settle among us seem to consider this result as a necessary consequence, and to acquiesce in it with a readiness which shows that they appreciate Anglo-American institutions, manners, and customs, as the best calculated for the adoption and free use of a free and republican people.

I propose, however, to show the erroneous character of the statement respecting the elements of the population of the United States, as quoted by the *Quarterly Review*. This I shall do very briefly, but I trust satisfactorily, by two statements; first, by answering the inquiry which may be made, what was the character, as to races, of the population which composed the thirteen British colonies which declared their independence in 1776; and, secondly, in giving the numbers and character of the emigrants from

Europe to the United States since the American Revolution, with an estimate of the probable numbers of the descendants of those emigrants, thus added to the population.

The British colonies in America, forming the original thirteen States, it is well known, were settled by emigrants, a large portion of whom were natives of Great Britain. No considerable emigration of Celtic Irish, or other people of Celtic origin, took place until after the commencement of the present century. The New England States, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia, were mainly settled by Englishmen. New York, the only Dutch colony, passed under British dominion, with a small population, partly Dutch and partly English, in 1694. The Dutch records of 1673 say: "They, and as many of the Dutch nation as are yet residing under this Government, are calculated to amount, women and children included, to about 6,000." In 1698 the total number of inhabitants in the colony was 18,067, and in 1723, the whites had increased to 34,393, and the blacks to 6,171:—total, 40,564. This was under the English Government. A few Dutch, Germans, and Poles settled in New Jersey; a few Swedes in Delaware, many Germans in Pennsylvania, where they afterwards became one-third of the population; and some French Protestants, called Huguenots, in New York, New Jersey, and South Carolina. Besides the small Polish colony in New Jersey referred to above, another branch of the Slavonic race was represented by a colony of a few Moravians and Bohemians in Pennsylvania.

With the exception of a few Scotch Highlanders, who settled in North and South Carolina and Georgia, I believe no Celtic colony is to be found among the settlements in the British North American colonies of either the 17th or 18th centuries. Settlements of Lowland Scotch and Scotch Irish from the North of Ireland were made in Pennsylvania and the Carolinas, and a small number of Irish protestants from Ulster and other parts of Ireland (of Lowland Scotch and not of Celtic origin), who have from time to time emigrated to the United States, have led to much confusion in investigating the elements of American population. But minute inquiries into the progress of the colonies will satisfy impartial observers that no considerable Celtic element existed in the population of America previous to the United States census of 1790. The Welch, considered by some as Celts, but who, in truth, are the descendants of the Cymri, furnished a small proportion of the early emigrants to British America. They have doubtless mixed more with their English neighbors on their native island than have the Scotch and Irish; and of the emigrants to America, particularly to New England, it was often difficult to distinguish between the Welsh and English who came over together in the early colonial history. There were, however, a few Welch colonies in the United States,

in the last century, where the emigrants retained their language, manners, and customs. Such is the county of Cambria, in Pennsylvania, and some smaller settlements in New York and other States. It is probably fair to estimate the Welch element in the present population of the United States at 500,000.

In giving a view of the various races who contributed to form the population of the colonies, I should mention that a few Jews were among the number, principally commercial adventurers in the Atlantic cities and towns; but the great proportion of the Jewish race now found there is of recent emigration.

We see, then, that the following European races made up the population of the British Colonies previous to the American Revolution, viz: Anglo Saxon, Lowland Scotch, Scotch-Irish, Welch, Highland Scotch, Germans, Dutch, French, (Huguenots), Moravians, Poles, Swedes, and Jews. To these may be added a few Flemish and Belgians, who came over with the Dutch to New York and New Jersey. At the commencement of the Revolutionary war, in 1775, the population of the 13 colonies has been estimated at 2,000,000 of whites, and 600,000 blacks. There were a few Irish gentlemen of Celtic origin who accompanied the English Catholics of Lord Baltimore's Colony to Maryland, and a few families of like origin are to be found among the old families of New England, and some of the other States, but their numbers were too inconsiderable to affect a general inquiry and calculation like the present. The same remark will apply to the Irish Celtic servants and laborers, who accompanied the Anglo-Saxon, Welch, and Scotch emigrants in the 16th and 17th centuries to the middle and southern colonies.

I now proceed to examine, very briefly, the effect of emigration from Europe to the United States, for a period of 60 years, viz: From 1790 to 1850, upon the present population of America. The following is the result of estimates and returns made up at the Census office at Washington, bearing upon this subject of emigration:

IMMIGRANTS FROM FOREIGN COUNTRIES TO THE UNITED STATES.

From 1790 to 1810	-	-	-	-	-	-	120,000
From 1810 to 1820	-	-	-	-	-	-	114,000
From 1820 to 1830	-	-	-	-	-	-	203,979
From 1830 to 1840	-	-	-	-	-	-	778,500
From 1840 to 1850	-	-	-	-	-	-	1,543,850
							<hr/>
Total number of immigrants for 60 years	-	-	-	-	-	-	2,760,329
Natural increase in periods of ten years	-	-	-	-	-	-	1,590,605
							<hr/>
Total number of immigrants since 1790, and their descendants in 1850.	-	-	-	-	-	-	4,350,934

The aggregate number of whites, as shown by the census of 1850, was 19,631,799; so that, if we allow half a million for the gain of a white population by the accession of Louisiana, Florida, Texas, California, and New Mexico to the territories of the United States, with a further allowance for other accessions by immigration previous to 1790, it appears that about three-fourths, or more than 14,000,000 of the present population, are descendants of European Colonists previous to the American Revolution.

Twenty years since, when the white population of the United States was 10,537,378, and the number of colored people 2,328,642 (viz: slaves 2,009,043; free 319,599,) according to the census of 1830, Professor Tucker, of Virginia, who has written much on the subject of population, made the following estimate on the division of the people of the United States, according to races and descent, viz:

	Census of 1830.
English and their descendants	6,000,000
Scotch	500,000
Irish	2,000,000
German	1,000,000
Dutch	500,000
French	300,000
Sweedish, Spanish, Swiss, etc.,	200,000
Total whites	10,500,000
Africans and their descendants	2,328,642

Total white and colored - - - - 12,828,642

On the above basis, slightly varied, I give the following estimate of the approximate proportions of the different races forming the population of the United States in 1850:

Anglo-Saxons	11,000,000
Lowland Scotch	700,000
Scotch and Anglo-Saxon Irish	1,500,000
Celtic Irish	2,000,000
Welch	300,000
German	2,000,000
Dutch	800,000
French (including Huguenots)	1,000,000
Danes and Norwegians	100,000
Swedes	100,000
Swiss	50,000
Spaniards, Italians, Jews, etc.	100,000
Total whites,	19,650,000
Africans, slaves and free	3,600,000
Total	23,250,000

With regard to the Irish Celtic population in the United States, it may be remarked that, compared with the inhabitants of the Anglo-Saxon stock, it is a short lived race, and the average rate of mortality among these recent emigrants to America is much greater than among other portions of the population.

“ANNALS OF SCIENCE.

BEING A RECORD OF THE INVENTIONS AND IMPROVEMENTS IN APPLIED SCIENCE, CONDUCTED BY HAMILTON L. SMITH, A. M.”

The above is the title of a very meritorious periodical just issued at Cleveland. It is published on the 1st and 15th, of each month, 16 pages in each number, at \$1 per annum. It is neatly printed, ably edited, and highly worthy of support. The following article is copied from the 4th number, which was issued December 1st.

On the Spheroidal State of Bodies.—At a lecture before the Royal Institution, England, M. P. H. Boutigny (D’Evreux) remarked that the simple phenomena of this subject would seem to have necessarily attracted attention from the most ancient times. Eller and Leidenfrost, however, about the middle of the last century, first truly observed the simple phenomena; but nothing had since been done, either to increase our knowledge of the singular facts, or to suggest an explanatory theory concerning them. Every one has observed, that when a metal disc, slightly concave, is heated in the fire or over a lamp, and a few drops of water are thrown upon it, the water assumes a spheroidal form. This is the simplest experiment, and forms the point of departure upon all researches into the subject. If we place a few drops of water upon a metal disc, slightly concave, and then submit it to the heat of a spirit lamp, ebullition and dissipation of the contents, in steam, follow in the ordinary course. But if we continue to elevate the temperature of the disc to about 300° , the water ceases to adhere to the disc, and appears to fall back upon itself, in taking a very flattened spheroidal form. Its temperature, which was before at 212° , is suddenly reduced to $+212^{\circ} - x$, and remains at this heat, whatever effort we may make to increase it. Evaporation, far from being increased by the increase of the surrounding temperature, becomes greatly diminished. The water finally assumes the appearance of regular waves in the spheroid, which often presents a completely stellar appearance, offering the greatest analogy to those produced by sonorous bodies when put in a state of vibration. M. Boutigny then ex-

hibited the experiments which he had recently made. He placed some nitrate of ammonia, which is inflammable at a very low temperature, upon a capsule of platina, greatly heated, but it assumed the spheroidal condition without ignition. On removing the lamp, however, and when the substance was cooled down to the ordinary temperature, it ignited. The beautiful violet colored vapor of iodine was produced also in the same manner, as also distilled water, which passed into steam as soon as the metal disc was sufficiently cooled. He then proceeded, by experiment, to show how the fact as relates to water, readily explains the occasional bursting of steam boilers, when, by the cooling of the boiler after the introduction of water into it when overheated, the contents are immediately and violently converted into steam.

The singular fact of the universal decrease of temperature in the liquid, when in a spheroidal state, was then adverted to. Numerous experiments had proved it. This phenomenon has given a result wholly unforeseen and most remarkable. The chemist knows that liquid anhydrous sulphurous acid boils at a very low temperature. M. Boutigny, in submitting this acid to similar conditions in a slightly humid atmosphere, the acid first took an opaline appearance, then lost its transparence, and finally solidified. The solid formed was ice! As a variation of this experiment, some drops of water were thrown upon the acid while in the spheroidal state, and the water immediately congealed. In order to demonstrate that liquids, when in this state, do not touch the surface of the metal, some concentrated nitric acid was dealt with, but it did not act upon the copper disc on which the experiment was made until the copper was cooled. A cylinder of silver, at a white heat, was also plunged into water; it was distinctly observed for many seconds (the room being darkened) not to be affected by the surrounding medium. The lecturer then insisted that it was not alone to such physical results that we are to look in the curious phenomena he has unveiled, but to the new method of chemical analysis and synthesis which they suggest. He has thus found that some bodies, which are not decomposed at boiling heat, are so when put in a spheroidal state; while others, placed in contact under the influence of this new molecular state, produce new combinations. When wine and alcohol are in a spheroidal state, their elements are found to be in a new order; ether is decomposed, and disengages aldehyde; chloride of ethyle decomposes nitrate of silver; ammonia dissolves iodine, &c. To the diminished temperature of bodies in this state, the lecturer ascribes the ability of conjurers to perform their feats of putting their bare arms in melted metal, &c.; and exemplified with what simplicity this may be done, by performing the experiment of himself manipulating some melted lead. To render the experiment harmless, it is only necessary

that the part exposed to the metal should be slightly moist. M. Boutigny concluded with a suggestion, that, as water only evaporates from its surface, the generation of steam in boilers might greatly be increased by placing metal diaphragms, pierced in small holes, across the inside of boilers. The evaporating power of a boiler, constructed on this principle, in comparison with one of the common construction, is 4 to 1, with all the advantages attending the impossibility of explosion.

M. Boutigny has contrived a boiler upon this principle, which has been found to generate steam rapidly and economically.—*Annals of Science.*

THE CAUSES OF RAIN AND STORMS.

BY DANIEL VAUGHAN.

The part which electricity acts in the production and the condensation of vapor, is not to be regarded as the sole ground for expecting that its removal from the higher strata of air, by various kinds of conductors, should be followed by rain. This wonderful agent possesses another property which has been long recognized, and which must render the fall of rain more dependent on its influence, and more susceptible of control by human skill. It is well known that bodies will attract certain light substances which are differently electrified, and will repel them when their electrical condition is changed. In consequence, therefore, of its excessive levity together with the high state of positive electricity in its upper strata, the atmospheric air will be attracted to the earth with greater force than could arise from gravity alone. This increase of weight is, however, far from being adequate to compensate for the rarity of the air at great elevations, or to disturb on ordinary occasions the equilibrium of the ærial ocean. Now, the attraction in question will be annulled by the discharge of electricity and the air from which it has been withdrawn will be repelled from the earth, and rise as an ascending current. The motion of this current will be accelerated by the attraction of the earth on surrounding air, from which no back discharge had taken place. Supposing the force of attraction from this cause to amount, on an average, to no more than ten grains to the solid foot of air, the current should rise with a velocity of more than 150 feet a second, while the influx of air to fill up the partial vacuum should take place with nearly the same rapidity.

From the expansion which the rising mass of air undergoes during its ascent, cold must be generated of sufficient intensity

to condense much of the aqueous vapor. In the receiver of an air pump, a cloud is frequently produced by the cold which attends the sudden rarefaction of the air during its exhaustion, and in consequence of the immense mass of air which is rarefied in the ascending column, the effect is much greater. The amount of heat liberated on the return of the vapor to its liquid form, expands the air with which it is blended, and facilitates the ascent of the current. Indeed, it has been supposed by Professor Espy that, if the air were highly saturated with moisture, the heat developed by the liquefaction would be sufficient to render the ascending column always warmer and lighter than the atmospheric strata of the same elevation; and accordingly, that the upward motion, when once commenced, should go on independent of any other agency. To this source Espy refers the origin of storms; and it must be admitted the valuable facts which his observations have accumulated prove the existence of an ascending vortex during hurricanes, and the continual influx of air to the place where it occurs. But the temperature of the air at different degrees of rarefaction, has not yet been determined with such accuracy as to enable us to calculate the amount of buoyancy of an ascending volume of air at great distances from the surface of the earth. It appears, however, very doubtful whether the condensation of vapor, under the most favorable circumstances, could give the air which it accompanies the required rarity; so that the production of the ascending vortex, from this cause alone, is very problematical. The theory of Espy has received much opposition, not only on this account, but also in consequence of its variance with some striking facts. How shall we account for the absence of rain in the island of Australia, or in the desert of Sahara, whose burning sands, heated by the solar rays, impart their high temperature to the lower stratum of air, and present the most favorable conditions for creating ascending currents, while the proximity of a sea and an ocean must furnish an abundant supply of humidity.

To explain in a satisfactory manner the cause of storms, the origin of hail, of water spouts, of violent showers of rain, and other atmospheric phenomena, it is necessary to take into consideration the effect of the attractive and repulsive forces which the earth exerts on the upper atmosphere, as it assumes different states of electricity; and, indeed, in physical enquiries, to neglect the action of any important agency; must render our estimate of the operations of nature very erroneous. Were it possible to erect on an extensive plain an iron tower three or four thousand feet high, the air penetrated by its summit should quickly change its electrical condition, and being then repelled by the earth, should commence receding from its surface. Immediately the air on all sides should flow to the tower, but on arriving in its proximity and parting with its electricity, it should be repelled

in turn and join the vertical current. The aqueous vapor which the air contains condenses on being thus transported to great elevations; but if the air rises rapidly, the descent of rain will be prevented until the water accumulates into drops of a considerable size, for the resistance of a medium becomes small in proportion to the force of gravity as the bodies increase in magnitude. The descending drops of rain impart moisture to the air they traverse, and by improving its conducting power, prepare a passage for the escape of the electricity; and it is by this kind of conducting media that it is enabled on most occasions to desert the atmosphere.

The agency which I have ascribed to such discharges of electricity, is shown by the result of observation. During a thunder storm, every flash of lightning is immediately followed by a sudden gush of rain; nor can we admit the explanation of many, who ascribe the development of electricity to the union of the vesicles of condensed vapor. In some instances the most violent tornadoes have been observed to commence with a rush of electricity to the earth, and this was almost instantly succeeded by the most terrific commotions of the air, which had been previously calm. It is unnecessary to refer to the awful and striking manifestations of electricity which almost invariably accompany excessive rains, tornadoes, hail storms, and water spouts, in which we witness evident proofs that the abstraction of this fluid from the atmosphere, is always attended with a vertical motion of the air, and the condensation of watery vapor.

It appears from the observations of Redfield, Reid and Espy, that during storms, the air at a central point is in a quiescent state, and here the barometer sinks to an unusually low degree. Round this point the air in the vicinity appears to circulate, and until the distance becomes great, the winds have a decidedly rotary character; but on the verge of the storm, however, the winds blow almost directly to the centre.

These facts, which have been adduced to prove two rival theories, appear to be the necessary result of the ascent of the ærial current at the centre, and the influx of air to fill the vacuum. Were the earth at rest this centripetal tendency should cause the wind to blow to the same point from all places; and there should be no deviation from this course, except such as might proceed from some previous irregularities in the motions of different portions of the air. But the diurnal motion of the earth considerably modifies this result, for the velocity of each place on its surface depends on their latitudes. Two places whose latitudes are 40 and 50 respectively, should move with velocities differing 120 miles an hour. If the wind should move from these two places to one intermediate between them, the Southern should be continually deflected to the East, and that from the North assume a Westward direction. The result would be that before arriving at their

destination, the velocity should be such as to create a vast whirlwind, circulating from west to east in the northern hemisphere, while in the southern hemisphere, the circulation should take place in an opposite direction. These deductions respecting the course of storms, strictly accord with the result of observation.

It is somewhat surprising that Espy should have denied the orbital motion of storms, which indeed is the necessary result of the earth's motion, combined with the centripetal motion of the air; a fact which his researches have so ably developed. But the effect of the earth's motion seems to have been overlooked, in consequence of the erroneous opinion that the air has an uninterrupted passage from the poles to the equator to produce the trade winds; and from the small effects arising from the earth's rotation, in this case, it is supposed that it may be entirely neglected when the air passes over a few degrees of latitude.

Miscellaneous Intelligence.

THOMAS FRANCIS MEAGHER—The Irish Patriot and Orator has addressed three Cincinnati audiences during the past month. As an orator he fell far short of anticipation in the requisite physical attributes of voice and delivery. His voice is shockingly bad.—His language however is very fine, being written in a pleasing magazine style, rather than in the strong and condensed style of true popular oratory. His lecture upon Australia, though rather too much in the style of a gossiping letter, was an interesting exposition of the great destiny of the rising republic of that Golden region, destined hereafter as a sister of the North American Republic to help onward the march of liberty and knowledge. His companions in exile he expects will soon succeed in making their escape to our shores. Meagher is undoubtedly a sterling patriot, and a man of noble sentiments. This has been especially shown in his generous cordiality to Kossuth and in his scornful independence of the Catholic Hierarchy. In a recent speech at New York he alluded in an eloquent and emphatic manner to the catholic clerical influence which had sought to control his course:

The Cincinnati Times elucidates this subject still further by the following remarks:

"**KOSSUTH** first, and then more fully and completely, **MEAGHER**, have shown that there are two parties of the foreign population, residents of this country—liberty, equality and patriotism being the ideas at stake. We will illustrate this remark.

"Ireland is a Catholic country, under a Protestant government; consequently, the revolutionary movement in that Island had the sympathy of the Hierarchy, and of all republicans, as a whole. The Irish patriots themselves, however, as is well known, were divided. One party was leagued with the church, and the rebellion, had it reached to the dignity of a revolution, under their control would have been but a transfer of political power and patronage from one set of blood-suckers to another—the people, the prize goose to be plucked. This was called the "Old Ireland" party. There was another party called the "Young Irelanders," consisting of MEAGHER, O'BRIEN and others, Catholics; and MITCHELL, an Unitarian, and others, Protestants. MEAGHER, openly and boldly, as is his noble nature, denounced the union of Church and State, religion and politics, in his great speech at Cork, and on another public occasion; and, from that hour, he became a doomed man. He was arrested, convicted and transported; and since his escape has encountered a strong personal current in this country.

"In Hungary, the rebellion of '48 was against a despotic government, allied with the Church, and it was, mainly, under the lead of a man, and a people, who were devoted as much to religious as to civil liberty. Every intelligent reader knows that Kossuth received the cold shoulder from the Hierarchy in the United States. Even in this city, the Catholic citizens are, in fact, divided into two parties; one goes with Church and State party, after the European fashion; the other follows the manly instincts that God has given them, and go for both religious and civil liberty; men who are willing to grant to others all they ask for themselves, and who will divorce religion and politics, believing that the union of the two is unwise—incompatible with republican institutions. This latter party is larger in Cincinnati than is generally supposed, yet, if they say but little, they vote right, and with Americans, on all questions of a politico-religious character. The New York Tribune, of a late date, in noticing Mr. MEAGHER's lecturing movements, says:

"A secret opposition is organized against him, by some intolerant gentlemen, on the pretended ground that he refused to lecture for Catholic charities, while he lectured for Protestant institutions, among which the Mercantile Library of this city is classed, though it might as well be called a Mahomedan institution, having nothing whatever to do with religion of any kind. What Mr. Meagher made up his mind to do, was not to lecture for any mere sectarian object, whether Catholic or Protestant. Another ground of hostility is his historical reference to the French revolution, in his lecture—an objection which implies that history ought to be a sealed book; and, lastly, that he was one of a revolutionary committee that met at the Shakspeare Hotel, which is untrue. One Catholic clergyman in Brooklyn, on Sunday last,

took occasion to attack him from the altar; but such illiberality is more likely to injure the assailant than the assailed, for the general feeling among all enlightened and liberal Catholics, as well as Protestants, is in his favor."

THE SIAMESE TWINS.—Many persons who in days gone by have taken a lively interest in the welfare of Messrs. Eng and Chang Bunkers, the celebrated Siamese Twins, may be glad to learn that these gentlemen are well, and live at Mount Airy, in this (Surrey) county, surrounded by their wives and children.

Mr. Eng has six and Mr. Chang five children, all of whom are apt scholars and remarkably well behaved, manifesting the strongest possible desire to learn their lessons, and to secure the good will of their teacher. They all partake strongly of the most refined Siamese cast of countenance, form and manner of deporting themselves. In truth, they are a credit to their parents and the community in which they live.

Messrs. Chang and Eng are alike remarkable for their industry and belligerent dispositions. They are strict and thorough-going business men, and woe to the unlucky wight who dares to insult them.

Formerly they resided in Wilkes county, but in consequence of the numerous actions for assault and battery brought against them in the county, they removed into the adjoining county, shortly after which they were fined \$15 and costs at Rockford, the county seat, for splitting a board into splinters over the head of a man who had insulted them.

As regards the supposed sympathy existing between them, it may be stated that their most intimate acquaintances deem them to be entirely independent of everything of the kind, and give as instances to sustain their opinion, that not long since they attended an auction sale of hogs, and bid against each other till they ran up the prices altogether above the market rates. Also, that on one occasion Mr. Eng or Chang, was taken ill and took to his bed, where he lay complaining for some time, although his brother scolded him severely all the while for detaining him in bed when he ought to have been attending to the business of their plantation.

On another occasion, as they were passing up the road a gentleman inquired of them where they were going—whereupon Mr. Eng replied, "I am going over the Blue Ridge in the stage," at the same time Mr. Chang, looking over his shoulder, replied with an arch smile, "I am going back home to look after our wives and children." When questioned about their mother some time since by an acquaintance, they stated that they had formerly received letters from her, but latterly they had heard no tidings of her, and even if they were to receive letters from her written in the Siamese language they would not be able to read them, as they had forgotten their mother tongue.

They are excellent hands to carry up a corner of a log house—exceeding all their neighbors in cutting saddles and notches in corner logs—both of them wielding the axe with a power and dexterity superior to the most expert wood-cutters in this wooden country. When they chop or fight, they do so double handed; and in driving a horse or chastising negroes, both of them use the lash without mercy.

A gentleman who purchased a black man a short time ago from them, informed the writer that he was “the worst whipped negro he ever saw.” They are inveterate smokers and chewers of tobacco—each chewing his own quid and smoking his own pipe; it has been remarked, however, in support of the sympathy supposed to prevail throughout their systems, that as a general rule, when one takes a fresh quid, the other does the same. It is also generally admitted that there is a marked difference in the systems and temperaments of the gentlemen, but they both almost invariably draw the same inference from topics presented to their consideration, and arrive at similar conclusions.

Mr. Eng not unfrequently gives serious offence to Mr. Chang, by jesting him about having one more child than he has. When shooting, a sport they are very fond of, one sights or takes aim, and the other, it is said, pulls the trigger; now if this be true, it would go far to prove the doctrine of supposed sympathy existing between the brothers; but it is questioned by most of the neighbors.

They readily admit and acknowledge themselves to entertain a strong Christian faith or belief, and are regular attendants at church and other religious meetings, where they deport themselves as becomes good citizens of the land of their adoption. They are strong politicians, and take a lively interest in all elections that occur in their district. As the writer was informed by a lady of Mount Airy, they are mighty stay-at-home people, rarely ever from home unless called away by business.—*Greensboro (N. C.) Patriot*.

ERICSON'S CALORIC SHIP.—The caloric engine which has been successfully applied by Capt. ERICSON to navigation, bids fair on account of its great economy of fuel to supersede the dangerous steam engine. A peculiar economy has been introduced by Capt. E., who uses repeatedly the same caloric, instead of allowing it to go off with every discharge of the heated air. I have never doubted the practicability of using air as a propelling agent in place of steam. My father, nearly thirty years ago, invented and published a description of an engine to be propelled by heated air, which possessed great simplicity of construction, and produced an extraordinary economy of fuel. Hunt's *Merchants' Magazine* thus describes the operation of Ericson's engine:

“Atmospheric air is first drawn into the supply cylinder,

whence it is forced into a reservoir, and from this it proceeds towards the working cylinder, before reaching which it passes through the regenerator. This structure is composed of wire net, somewhat like that used in the manufacture of sieves, placed side by side, until the series attain a thickness of twelve inches. Through the almost innumerable cells, formed by the intersection of these wires, the air must pass on its way to the working cylinder. In passing through these, it is so minutely subdivided, that the particles composing it are brought into close contact with the metals which form the wires. Now let us suppose, what actually takes place, that the side of the regenerator nearest the working cylinder is heated to a high temperature. Through this substance the air must pass before entering the cylinder, and in effecting this passage, it takes up, as is demonstrated by the thermometer, about 450 degrees of the 480 degrees of heat required, as we before stated, to double its volume. The additional 30 degrees are communicated by the fire beneath the cylinder. The air has thus become expanded; it forces the piston upwards; it has done its work—valves open, and the imprisoned air, heated to 480 degrees, passes from the cylinder, and again enters the regenerator, through which it must pass before leaving the machine.

“We have said that the side of this instrument nearest the working cylinder is hot, and it should be here stated that the other side is kept cool by the action upon it of the air entering in the opposite direction at each upstroke of the pistons. Consequently, as the air from the working cylinder passes out, the wires absorb its heat so effectually, that when it leaves the regenerator it has been robbed of all, except about thirty degrees. In other words, as the air passes into the working cylinder it gradually receives from the regenerator about four hundred and fifty degrees of heat; and as it passes out, this is returned to the wires, and is thus used over and over, the only purpose of the fires beneath the cylinders being to supply the thirty degrees of heat we have mentioned, and that which is lost by radiation and expansion. Extraordinary as this statement may seem, it is nevertheless incontrovertibly proved by the thermometer to be quite true.”

MISS ROSINA DELIGHT RICHARDSON, according to a writer in the *Boston Journal*, is a delectable armful, belonging to the State of New Hampshire, where she resides with her father, a substantial farmer. She is thus described :

“Miss Rosina is nineteen years of age, is 5 feet 3½ inches in height, measures 5 feet 4½ inches around the waist, 6 feet 2 inches around the hips, 22 inches around the arm above the elbow, 14 inches around the arm below the elbow, and 2 feet 10 inches in a straight line across the shoulders. At birth she

weighed 6 pounds; at 5 years, 148 pounds; at 10 years, 268 pounds; at 15 years, 365 pounds; and now, at 19 years of age, she weighs 478 pounds. On estimating the quantity of cloth in her clothing when dressed for a ride on a winter's day, we found it to contain $98\frac{1}{2}$ yards of $\frac{3}{4}$ yard wide cloth. She has brown hair, dark blue eyes, is of fair complexion, and has what phrenologist would call a well balanced head, the perceptive organs predominating. She can knit, spin, weave, make a shirt or batch of bread, is a good singer, and plays the piano with taste and skill; is considered one of the best scholars in the town where she resides; is courteous and affable, and lively in conversation, and evinces a general knowledge which might raise a blush on the cheek of some of our city belles."

LAND LIMITATION IN HUNGARY.—Mr. Charles Brace, a correspondent of the N. Y. Tribune, describes in one of his letters the practical operation of land limitation in Hungary, at Debreczin. His statements are highly instructive:

The appearance of the Debreczin population has something in it very comfortable and substantial. In all the fifty-five thousand, there is not a noble, but there are no beggars. The wretched looking Wallachs, or Raizen, which haunt the streets of Pesth, are seldom seen here. Debreczin is a "free city," and as such, was never liable to any feudal exactions, and was represented in the Parliament, (*Reichstag*.) Some of the richest Bauer of the kingdom lived there. My friends showed me several of the finest houses of the city, which had been built and owned by "Peasants,"—that is, by men deprived of all general political rights, and belonging to the same class which, in the other parts of the country, were subject to feudal labor. The prosperity and intelligence of the whole population seem to have been always very remarkable. They all agree there is no poverty there, and the Protestant Bishop, (*superintendent*.) who knows the people well, said to me, that to his knowledge, there were not a hundred people in the city who could not read. Many of them seemed to think that the peculiar prosperity of Debreczin arose from a curious old agrarian, or rather Jewish-like provision of the law, that *no citizen should own, in land, more than 120 joch, or about 168 acres*. His property in money or houses was not limited, but this was to be the extent of his landed property. A singular provision to have risen here, where the ideas either of the Mosaic landed laws, or of French Socialism, were never in any way thought of. I was curious to know about the details. It seems to me, a great variety of difficulties would arise. Each contract must be inspected, to know that no more than the legal amount of land was purchased. There must be clerks and books, and a great administration to keep an exact account of each man's estate. There could be no rapid buying and selling, and business

must be exceedingly hampered by such regulations. Then, what was to be done with the estates, which, by inheritance, had reached an illegal size?

They answered—and I think very sensibly, as far as their circumstances are concerned—that business was impeded, it was true—and that no great fortunes were made there—but they thought that more than counterbalanced by the general comfort and contentment. People were never very rich there, but they were never very poor, they said. There were many small landholders there, who could not probably, in the worst of times, lose all their property. There was very little temptation in buying and selling land for business purposes there, and people lived more comfortably on the whole. They had seen enough of the evils of overgrown estates, in other parts of Hungary. As for the administration, there was no difficulty, they said. No purchase was legal which was not made known to the town clerk; he had the amounts of landed property belonging to each citizen registered opposite to his name in a book for the purpose, and the whole was settled in a moment. If more than his legal share was inherited by any person, the overplus accrued to the city; though where exactly the dividing line would fall in such cases, whether across the good or across the bad, they did not state.—However, so much for the *fact* of Hungarian “*agrarianism*!”

ODDITIES.—Gen. Rees E. Price, of Cincinnati proposes to dissolve the union between himself and the American Government. Gen. Price is a very upright, conscientious, and well behaved gentleman, enjoying a liberal share of property; but his extreme notions being in a minority of one, have caused him heretofore to be placed under control as a monomaniac, from which, however, he was released. Gen. Price repudiates Democracy, and claims to be neither Democrat nor Aristocrat, but a *Theocrat*; a God-governed and independent republic in himself. He proffers to dissolve partnership with the State of Ohio on equitable terms—paying his share of the public debt, which he estimates at \$500, and being thenceforth entirely free from taxation. The General in politics is a little in advance of the nullifiers and secessionists, while in theology he rivals Joe Smith and the pope of Rome. Being in a minority, he must be crazy; but had he fifty thousand followers it might be discovered that he was a great man.

Col. Edward Stiff, of Gadsden, Ala., editor of Stiff's Radical Reformer, announces a forthcoming tragedy from his prolific pen in the following style, which speaks for itself:

“THE CONSPIRACY.—This is a Tragedy in 5 acts, intended first for the readers of the “Radical Reformer,” and next for the representations on the stage.

"If the opinions of competent judges indicate the calibre of dramatic writings at all, Shakspeare has a rival on the *to be* classic banks of the Coosa, to eclipse at this first shot the immortal Bard of Avon. The Conspiracy is to completely galvanize its readers, and Theatres at its recitals are to be filled with the beauty and *clite* of our cities. God sometimes chasteneth to inspiration, and exalts the righteous through the terrible ordeal of persecution."

THE USELESS AND EXPENSIVE SHIP.—It is correctly reported that that great ship called the *Pennsylvania*, built for the navy of the United States at an expense of *eight hundred thousand dollars*, has become rotten and unseaworthy. All the voyage she ever made was from the place where she was built to Norfolk, Va. Reckoning the interest on what she cost, and the sum will amount to over *one million dollars*—and all for what? Echo answers *what!* and that is the best answer that can be given.

And yet it is all very well. No one complains. Politicians, who are always on the scent to hunt up extravagance and defalcation, are silent about this. It is all very well—all matter of course. The Navy must be well supplied with ships, and ships will rot. Now, if a million of dollars had been asked for the establishment of some national agricultural institution how astonished some demagogues would have been. What awful shrugging of shoulders, and twitching of eyebrows, and wagging of tongues there would have been. If, perchance, such an amount had been granted, and a national school, or some other useful institution established, how certain uneasy mortals would have been agonized about the extravagance of Congress and the great waste of the people's money. But now—oh, la, it is only a seventy-four gone to decay. It only cost a million dollars, and Uncle Sam is able to build two or three better ones. So it is; nations are more willing to pay extravagantly for follies than for useful and necessary institutions.—*Pleasure Boat*.

THEFT MANIA.—Gall first called especial attention to the fact that propensities to homicide, suicide and theft, were often manifested to an abnormal excess, which sometimes constituted an actual insanity. It is difficult in many cases to determine whether to regard such cases as examples of insanity, or examples of simple depravity. The excessive action of the animal organs is itself so nearly akin to insanity, that it is difficult to determine in many cases, how much of insanity may be present. The true relations and affinities of insanity and crime have never yet been explained. The neurological system affords that explanation, as I shall hereafter show. The following paragraph from the *Cleveland "Forest City"* presents an example of the theft mania:

"A lady of respectable appearance went into the jewelry store

of Field & Gray, on Monday, and expressed a desire to purchase a gold ring. A large assortment was shown her, and after carefully looking at them all, she pretended not to be suited, and started to leave. The young man in the establishment expressed a wish that she should return a couple of valuable gold rings before leaving. At this she assumed an air of lofty indignation and said that she came not there to be insulted. The young man was not to be intimidated by such an outburst of indignation, and called in Barney Mooney, who soon made the young lady disgorge the stolen articles, and lodged her in jail until he could ascertain some information as to her name and place of residence, as she obstinately refused an explanation. After being in the lock-up about half an hour she began to reflect on her situation, and then said that she was the daughter of a minister of the Gospel in an adjoining town—that she was married to a very respectable man, who is now in California—that she had a sister living in Ohio City, who occupied a position in the first class of society, and that she herself was not driven to the commission of the act through necessity, having a large amount of money with her at the time, but was infatuated by a desire to pilfer. Upon learning that her story was true, she was released from custody. This will probably serve as a lesson to her hereafter, and prevent the recurrence of such disgraceful conduct.

FEMALE MEDICAL EDUCATION.—One of the most pleasing and hopeful changes of the times is the entrance of women into the medical profession, not as half taught nurses but as honorably educated and well qualified physicians. The few who have set the example to their sisters, appear to be sustained by an extensive and cordial sympathy—one evidence of which is seen in the formation at Cleveland, Ohio, of a *Female Medical Education Society*, among the officers of which I recognize the Secretary, Mrs. T. C. Severance, as one of our most gifted and vigorous female writers. The following is the constitution:

oARTICLE 1. This Society shall be called *The Ohio Female Education Society*—its object being the encouragement of Medical Education among women.

ART. 2. Its officers shall consist of a President, Vice President, Secretary and Treasurer, who shall perform the usual duties of their respective offices; and a Board of Managers—inclusive of these—to consist of nine members.

ART. 3. The Board of Managers shall transact all business of the Society relative to the examination of applicants and decision in their case, and to the direction of the funds; and six of its members shall constitute a quorum.

ART. 4. Applicants shall be required to furnish testimonials of a past upright life, of a good rudimental education, and of a sufficiently robust constitution or freedom from actual disease, to endure the course of study, and furnish reasonable ground of hope that the aid given will ever be profitably employed.

ART. 5. Applicants, upon receiving aid, will be required to give a written pledge of honor that when they shall become well established, or their income

otherwise be sufficient to warrant, they will return to the Society the sum loaned, without interest.

ART. 6. The Society will allow to applicants entire freedom of choice in regard to the course of study and practice to be pursued.

ART. 7. The Board of Managers shall meet regularly upon the first Tuesday of each month, at which time all applications must be presented.

ART. 8. The Society shall hold its Annual Meetings upon the first Tuesday of October, for the election of officers—each of whom shall continue in office until a successor shall be appointed—and for the alteration or amendment of the Constitution; at which time, also, the yearly report of the Secretary will be read, and an address delivered by the President, or other person designated by the Society.

ART. 9. The payment of one dollar annually shall entitle a lady to membership, and the payment of five dollars shall constitute a gentleman or lady an honorary member. All other sums given, shall be entered as contributions.

A writer in the *Ohio Cultivator* recommends the formation of of auxiliary societies. Let those who wish to forward this benevolent undertaking address themselves with their contributions to Mrs. Severance.

In connection with this movement I must take occasion to claim a share of credit for the Eclectic Medical Institute which has always been open to female students, and for several sessions past has made them welcome. Seven female students have been matriculated the present session, and under the present arrangements the Institute is the best and cheapest school to which a female can resort—and one too in which her presence will be recognized by the Faculty and the class with pleasure.

EFFECT OF THE EARTH'S ROTATION ON LOCOMOTIVES.—Mr. Uriah Clark, of Leicester, has called our attention to an article in the *Mechanics' Magazine*, by himself, on the influence of the earth's rotation on locomotion. It is well known that as the earth revolves on its axis once in twenty-four hours, from west to east, the velocity of any point on its surface is greater near the equator, and less further from it, in the ratio of the cosine of the latitude. Mr. C. says: "Some rather important conclusions in railway travelling arise out of the view now taken. The difference between the rotative velocity of the earth in surface motion at London and at Liverpool, is about 28 miles per hour; and this amount of lateral movement is to be gained or lost as respects the locomotive, in each journey, according to the direction we are travelling in from one place to the other; and in proportion to the speed will be the pressure against the side of the rails, which, at a high velocity, will give the engine a tendency to climb the right hand rail in each direction.

Could the journey be performed in two hours between London and Liverpool, this lateral movement or rotative velocity of the locomotive would have to be increased or diminished at the rate of nearly one quarter of a mile per minute, and that entirely by side pressure on the rail, which, if not sufficient to cause the en-

gine to leave the line, would be quite sufficient to produce violent and dangerous oscillation. It may be observed, in conclusion, that as the cause above alluded to will be inoperative while we travel along the parallels of latitude, it clearly follows that a higher degree of speed may be attained with safety on a railway running east and west, than on one which runs north and south." There is no doubt of the tendency Mr. Clark speaks of on the right hand rail, but we do not think it will be found to be so dangerous as he says. It will be the greatest on the Great Northern and Berwick lines, and least on the Great Western.—*Exch.*

The influence of the same cause on storms is explained in this number, by Mr. Vaughan.—*Ed.*

ARTIFICIAL STONE.—Owen Williams, of England, has just taken out a patent for the manufacture of Artificial Stone. The following ingredients are used in preparing it: 180 lbs pitch, 4 1-2 galls. dead oil or creosote, 18 lbs. rosin, 15 lbs. sulphur, 44 lbs. finely powdered lime, 130 lbs. gypsum, 25 cubic feet of sand, breeze, scoria, bricks, stone, or other hard materials broken to pieces and passed through a half-inch sieve. The sulphur is first melted with about thirty lbs. of pitch, after which the rosin is added, then the remainder of the pitch with the lime and gypsum, which are introduced by degrees and well stirred, and the mixture brought to boil. The sand, or broken earthy or stone material is then added, and the whole mass well stirred, and the dead oil is in a fit state to be moulded into blocks. In order to consolidate the blocks, pressure is applied to them in the moulds. The patentee gives also the proportions of the above materials to be used as a composition for laying pavements, as a cement for uniting to each other blocks of the first named composition when used for building purposes, and as a coating for bridges, the roofs of buildings, &c. The Artificial Stone hardens in about a week, when it becomes as stubborn as granite. The composition is not only a very durable, but a cheap one, it costing less to erect buildings out of this material than from the commonest kind of brick. A roadway, plastered with this material, becomes a solid flooring of rock in about ten days.—*American Artizan.*

HAYTI.—Rev. W. L. J. Judd, who has spent several years in Hayti, in a letter to the Boston Traveller, thus speaks of the character of the people, and the security for life and property among them:

"I hesitate not to say that I believe there has been the past six years less murder, less robbery, and less incendiarism, at Port-au-Prince, than in any city of the same size, and during the same period, in the United States. During this whole period, and even longer, there has been but one fire in that city of thirty thousand inhabitants! Where can a parallel case be found in

the United States? I have traveled in the country at all hours of the day and night, "o'er mountain heights and in valleys low," in lonely forests and amid cultivated fields, and have never been treated with disrespect by the coarsest peasant or the rudest mountaineer. In these journeys I have never been refused a night's lodging at the poorest cabin where from necessity or convenience I chose to stop. And when I have called for the bill of fare, I am almost universally answered by the expression, "Just what you choose to give." (*Co que vous voulez me donnez, or, in the simple patois of the paysan, ca ou vous voulez baille moi.*) And although it is the land of the old buccaneers, and where the example of foreigners has exhibited more of the violence and fraud than of gentleness and honesty, still from Tibaron to Samana, and from Jacmel to Cape Haytien, I know of not a single cove where a ship may not enter, nor a single mountain fastness where a traveller may not pass with safety from robbers.—*Ex.*

A LONG TUNNEL.—One of the longest tunnels in the world is now approaching completion. It is situated in Hungary, and from the shore of the River Gran, not far from Zarnowitz, to the mines in the Schemnitzer Hill. It is about ten English miles long, and it is intended to answer the double purpose of a channel to drain off the water accumulating in the works, and of a railway to transport the ore from the mines to the river.—*Exch.*

COMPOSITION OF THE MOON.—Every object on its surface of the hight of one hundred feet is distinctly seen through Lord Rosse's telescope. On its surface are craters of extinct volcanoes, rocks and masses of stone almost innumerable. But there are no signs of habitations such as ours, no vestige of architectural remains, to show that the moon is or ever was inhabited by a race of mortals similar to ourselves. No water is visible—no sea, no river: all is desolate.—*Exch.*

A curious case of somnambulism is recorded in the Chillicothe Gazette. A daughter of Mr. Thomas Koine arose from her sleep, and in her night-clothes, walked four miles up the Scioto river, waded into the stream, and swam across a deep part, and was found, by an "early riser," sitting on the bank of the river, asleep! Remarkable enough, as the girl was only thirteen years old, and couldn't swim when awake!—*Exch.*

There is now exhibited in Leeds, a young lady, aged eighteen, whose beard measures between four and five inches in length! As an inducement to persons to attend the exhibition, it is announced that "visitors will be permitted to touch the beard."—*Ex.*